REMARKS

Claims 15-42 are pending in the application. Claims 37 and 40 were amended to clarify the antecedent basis of "said free sealing edge". This amendment is for clarification only and does not narrow the scope of either claim 37 or 40. The abstract was replaced with a new abstract. No new matter was added.

Claims 37-40 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. In view of the amendments to claims 37 and 40, Applicants respectfully submit that this rejection is moot.

Claims 15, 25-36 and 40-42 were rejected under 35 U.S.C. § 102(e) as being anticipated by Roe, U.S. Patent 5,607,760. Applicants respectfully traverse this rejection.

The present invention as defined in claim 15 is directed to a method of achieving in an absorbent article an improved sealing ability against the skin of the wearer, at a given available elongation, by at least one sealing edge on each side of the center line, comprising modifying or treating the absorbent article in such a way as to cause the absolute value of $\Delta P=2\gamma \cos\theta m/r$ for the sealing edge to increase, where γ designates the surface tension of a liquid to be absorbed by suction, r designates the radius of the largest circle that can be encompassed in any pore with walls formed by the sealing edge against the wearer's skin at the given available elongation, and $\cos\theta m$ is the weighted mean value of $\cos\theta$, where θ is the wetting angle of the liquid to the sealing edge or the skin comprising the pore walls.

The invention as defined in claim 29 is directed to an absorbent article that includes an absorbent body disposed between a liquid-impermeable bottom sheet which is intended to lie distal from a wearer in use, a liquid-permeable upper sheet which is intended to lie proximal to the wearer, and either 1) at least one longitudinally extending liquid barrier on each side of a center line of the upper sheet, made of essentially liquid-impervious material and fastened along or adjacent to a respective longitudinally extending side extremity of the article and including a free elastic sealing edge intended to be stretched against the wearer, or 2) above the upper sheet, a liquid-impermeable top sheet which is intended to lie against the wearer, includes elastic for shaping the article to the wearer's body, and includes apertures intended to lie in register with the anus and the urethra orifice of the wearer, around which apertures elastically puckered sealing edges are disposed in the top sheet. In respect of at least one sealing edge on each side of the center line of said absorbent body, the absolute value of $\Delta P=2\gamma \cos\theta m/r$ lies above a line $y=kx + m$, where x designates the available elongation of the sealing edge, k has the value -14/30 and m has a value in the range of 48 to 69, within the major part of an available elongation range of between 20 and 40 %, and where γ designates the surface tension of a liquid to be absorbed, r designates the radius of the largest circle that can be enclosed in any pore with walls formed by the

sealing edge against the skin of the wearer at a given available elongation, and cosθm is the weighted value of cosθ, where θ is the wetting angle of the liquid to the sealing edge or the skin comprising the pore walls.

Roe discloses a disposable absorbent article having a lotion coating on the outer surface of the topsheet that is semisolid or solid at ambient temperatures (i.e., at 20°C) and is adapted to be transferred to the wearer's skin, where it acts to reduce the adherence of BM to the skin of the wearer, thereby improving the ease of BM clean up and enhancing skin softness. *Column 3, lines 1-9.* The lotion compositions of Roe comprise: (1) an emollient to improve the lubricity of the solid polyol polyester(s); (2) a solid polyol polyester(s) immobilizing agent; (3) optionally a hydrophilic surfactant(s); and (4) other optional components. *Column 10, lines 34-38.* Emollients taught as useful in Roe can be petroleum-based, fatty acid ester type, alkyl ethoxylate type, fatty acid ester ethoxylates, fatty alcohol type, polysiloxane type, or mixtures of these emollients. Suitable petroleum-based emollients include those hydrocarbons, or mixtures of hydrocarbons, having chain lengths of from 16 to 32 carbon atoms. Petroleum based hydrocarbons having these chain lengths include mineral oil (also known as "liquid petrolatum") and petrolatum (also known as "mineral wax," "petroleum jelly" and "mineral jelly"). Mineral oil usually refers to less viscous mixtures of hydrocarbons having from 16 to 20 carbon atoms. Petrolatum usually refers to more viscous mixtures of hydrocarbons having from 16 to 32 carbon atoms. Petrolatum and mineral oil are particularly preferred emollients for lotion compositions in Roe. *Column 15, lines 47-61.* The lotion may be applied to any part of the diaper wherein it can come in contact with the wearer's skin. *Column 25, lines 26-28.*

Roe is specifically directed to an absorbent article which has a topsheet of hydrophilic material to promote rapid transfer of liquids through the topsheet. *Column 7, lines 51-53; column 21, lines 40-42.* Roe further states:

> Similarly, it is important that the lotion composition also be sufficiently wettable to ensure that liquids will transfer through the topsheet more rapidly. This diminishes the likelihood that body exudates will flow off the lotion coating rather than being drawn through the topsheet and being absorbed by the absorbent core. Depending upon the particular immobilizing agent used in the lotion composition of the present invention, an additional hydrophilic surfactant (or a mixture of hydrophilic surfactants) may, or may not, be required to improve wettability...Similarly, a hydrophobic emollient such as petrolatum will require the addition of a hydrophilic surfactant.

Column 21, lines 42-61. Thus, Roe requires that the lotion composition be hydrophilic in order to ensure that the topsheet or other portion of the absorbent article treated is or remains hydrophilic.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The rejected claims are directed to a method or an absorbent article wherein the absorbent article is modified or treated in such a way as to cause the absolute value of $\Delta P=2\gamma \cos\theta m/r$ for the sealing edge to increase or wherein the absolute value of $\Delta P=2\gamma \cos\theta m/r$ lies above a line $y=kx + m$, where x designates the available elongation of the sealing edge, k has the value -14/30 and m has a value in the range of 48 to 69, within the major part of an available elongation range of between 20 and 40 %.

The absolute value of $\Delta P=2\gamma \cos\theta m/r$ may be increased by influencing the wetting angle between the liquid to be sucked up and the skin or the barrier material; influencing the pore radius, i.e., the capillary radius, formed between the barrier material and the skin; and by influencing both wetting angle and pore radius. *Page 13, lines 10-15.* Obtaining a higher wetting angle will result in the skin being more hydrophobic in distinction to normal skin. *Page 15, line 19.*

Roe does not disclose a number of features of the claimed invention. For example, Roe does not disclose increasing the absolute value of $\Delta P=2\gamma \cos\theta m/r$, with the resultant advantages as explained in the application, nor does Roe suggest increasing the absolute value by influencing wetting angle or pore radius to improve sealing. Rather, Roe specifically requires the use of a topsheet and lotion thereon which is hydrophilic to promote transfer of liquids. Since Roe does not disclose each and every feature of the rejected claims, Applicants respectfully request that the anticipation rejection over Roe be withdrawn.

Claims 16-24 and 37-39 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Roe. Applicants respectfully traverse this rejection.

Roe describes an absorbent article where the liquid pervious upper layer, or other portion of the article, is coated with a lotion that should not prevent the passage of liquid. The intention is to prevent BM from adhering to the skin and to simultaneously make the skin soft by smearing it with the lotion. See, *column 1, line 22 - column 2, line 54.* In the background section of the Roe patent, the problems with the prior art at the time of Roe are discussed, mainly the problems with previous hydrophobic materials which resulted in the slow transfer of urine to underlying absorbent cores. *Column 2, lines 39-45.*

The claimed invention relates to obtaining an improved sealing ability by use of $\Delta P=2\gamma \cos\theta m/r$. As explained above, the absolute value thereof may be increased by influencing the wetting angle between the liquid to be sucked up and the skin or the barrier material; influencing the pore radius, i.e., the capillary radius, formed between the barrier material and the skin; and by influencing both wetting angle and pore radius. Influencing the

wetting angle results in more hydrophicity. Roe does not describe or suggest improving sealing ability, increasing hydrophicity by increasing a wetting angle (rather, Roe requires hydrophilicity) or influencing pore radius.

The Office Action points out the teachings in Roe concerning the use of petrolatum. However, Roe makes clear that, although petrolatum may be used in the lotion taught therein, if such a material is used, the addition of a hydrophilic surfactant is required to obtain a sufficiently wettable lotion composition. *Column 21, lines 40-61.* Moreover, petrolatum is not suggested for use alone and must be used in combination with other ingredients in the lotion composition of Roe to provide the desired hydrophilic qualities. That hydrophilicity is important is clear throughout Roe at least from column 21, line 40 forward.

The claims are directed to methods and absorbent articles which aid in preventing leakage of absorbent articles. Roe is directed to preventing the adherence of BM and softening the skin. One of skill in the art would not have been motivated to use the disclosure of Roe to provide an absorbent article with less leakage. Moreover, one of skill in the art would not have modified Roe to increase wetting angle and thus hydrophibicity in view of the numerous teachings of Roe to use hydrophilic materials. In view thereof, and in view of the lack of disclosure in Roe of the claimed features of the invention, Applicants respectfully request this rejection be withdrawn.

Applicants believe they have responded to all matters raised in the above referenced Office Action and that the application is now in condition for allowance. If the Examiner has any questions concerning this Application or this Reply and Amendment, the Examiner is invited to contact the undersigned.

Respectfully submitted,

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Mark-up of Abstract

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A method of improving in an oblong absorbent article that includes a liquid-impermeable bottom sheet, an upper liquid-permeable sheet and an absorbent body disposed between these sheets, and on each side of the longitudinal center line of the upper sheet at least one longitudinal elastic liquid barrier, the sealing effect afforded against the skin of the wearer by at least one liquid barrier on each side of said centre line by causing the absolute value of the negative produce $2\gamma \cos\theta m/r$ in this liquid barrier to increase. **[**A method of increasing in an absorbent article that includes an essentially liquid-impermeable top sheet above an absorbent body enclosed between an upper liquid-permeable sheet and a liquid-impermeable sheet, the top sheet being provided with elastic for shaping the article to the wearer's body and incorporating apertures intended to register with the anus and the urethra orifice of a wearer in use, around which apertures elastically puckered sealing edges are disposed, the absolute value of the negative product $2\gamma \cos\theta m/r$ for at least one sealing edge. An absorbent article where the absolute value of the product $2\gamma \cos\theta m/r$ for at least one liquid barrier on each side of the centre line of the absorbent body or for at least one sealing barrier lies above the line $y = kx + m$, where x designates the available elongation, k has the value -14/30 and m has the value 48 within the major part of an available elongation range of between 20 and 40**]**.

Mark-up of Claims
Submission Under 37 CFR 1.114
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37. (Amended) The article according to Claim 29, wherein, when the article is donned, said free elastic sealing edge has a pore radius which is essentially independent of the available elongation or stretch and which is at most 0.10 mm.

40. (Amended) The article according to Claim 29, wherein said free elastic sealing edge is comprised of a ribbon-like elastic film.